Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

Claim 1 (currently amended). A composition comprising a human IL-3 (hIL-3) variant having increased affinity, relative to native hIL-3, for the high-affinity IL-3 receptor, wherein the variations from native hIL-3 comprise the replacement of one or both of the residues Asp^{101} and Lys^{116} by other amino acids.

~~a human interleukin-3 mutant polypeptide of the Formula:~~

~~Ala Pro Met Thr Gln Thr Thr Ser Leu Lys Thr Ser Trp Val Asn~~
~~1 5 10 15~~

~~Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~20 25 30~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Xaa Xaa~~
~~35 40 45~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~50 55 60~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~65 70 75~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~80 85 90~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~95 100 105~~

~~Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~110 115 120~~

~~Xaa Xaa Xaa Gln Gln Thr Thr Leu Ser Leu Ala Ile Phe~~
~~125 130~~
~~[SEQ ID NO:1]~~

~~wherein~~
~~Xaa at position 17 is Ser, Lys, Gly, Asp, Met, Gln, or Arg;~~
~~Xaa at position 18 is Asn, His, Leu, Ile, Phe, Arg, or Gln;~~
~~Xaa at position 19 is Met, Phe, Ile, Arg, Gly, Ala, or Cys;~~
~~Xaa at position 20 is Ile, Cys, Gln, Glu, Arg, Pro, or Ala;~~
~~Xaa at position 21 is Asp, Phe, Lys, Arg, Ala, Gly, Glu, Gln, Asn, Thr, Ser or Val;~~
~~Xaa at position 22 is Glu, Trp, Pro, Ser, Ala, His, Asp, Asn, Gln, Leu, Val or Gly;~~
~~Xaa at position 23 is Ile, Val, Ala, Leu, Gly, Trp, Lys, Phe, Leu, Ser, or Arg;~~
~~Xaa at position 24 is Ile, Gly, Val, Arg, Ser, Phe, or Leu;~~
~~Xaa at position 25 is Thr, His, Gly, Gln, Arg, Pro, or Ala;~~
~~Xaa at position 26 is His, Thr, Phe, Gly, Arg, Ala, or Trp;~~

~~Xaa at position 27 is Leu, Gly, Arg, Thr, Ser, or Ala;~~
~~Xaa at position 28 is Lys, Arg, Leu, Gln, Gly, Pro, Val or Trp;~~
~~Xaa at position 29 is Gln, Asn, Leu, Pro, Arg, or Val;~~
~~Xaa at position 30 is Pro, His, Thr, Gly, Asp, Gln, Ser, Leu, or Lys;~~
~~Xaa at position 31 is Pro, Asp, Gly, Ala, Arg, Leu, or Gln;~~
~~Xaa at position 32 is Leu, Val, Arg, Gln, Asn, Gly, Ala, or Glu;~~
~~Xaa at position 33 is Pro, Leu, Gln, Ala, Thr, or Glu;~~
~~Xaa at position 34 is Leu, Val, Gly, Ser, Lys, Glu, Gln, Thr, Arg, Ala, Phe, Ile or Met;~~
~~Xaa at position 35 is Leu, Ala, Gly, Asn, Pro, Gln, or Val;~~
~~Xaa at position 36 is Asp, Leu, or Val;~~
~~Xaa at position 37 is Phe, Ser, Pro, Trp, or Ile;~~
~~Xaa at position 38 is Asn, or Ala;~~
~~Xaa at position 40 is Leu, Trp, or Arg;~~
~~Xaa at position 41 is Asn, Cys, Arg, Leu, His, Met, or Pro;~~
~~Xaa at position 42 is Gly, Asp, Ser, Cys, Asn, Lys, Thr, Leu, Val, Glu, Phe, Tyr, Ile, Met or Ala;~~
~~Xaa at position 43 is Glu, Asn, Tyr, Leu, Phe, Asp, Ala, Cys, Gln, Arg, Thr, Gly or Ser;~~
~~Xaa at position 44 is Asp, Ser, Leu, Arg, Lys, Thr, Met, Trp, Glu, Asn, Gln, Ala or Pro;~~
~~Xaa at position 45 is Gln, Pro, Phe, Val, Met, Leu, Thr, Lys, Trp, Asp, Asn, Arg, Ser, Ala, Ile, Glu or His;~~
~~Xaa at position 46 is Asp, Phe, Ser, Thr, Cys, Glu, Asn, Gln, Lys, His, Ala, Tyr, Ile, Val or Gly;~~

~~Xaa at position 47 is Ile, Gly, Val, Ser, Arg, Pro, or His;~~

~~Xaa at position 48 is Leu, Ser, Cys, Arg, Ile, His, Phe, Glu, Lys, Thr, Ala, Met, Val or Asn;~~

~~Xaa at position 49 is Met, Arg, Ala, Gly, Pro, Asn, His, or Asp;~~

~~Xaa at position 50 is Glu, Leu, Thr, Asp, Tyr, Lys, Asn, Ser, Ala, Ile, Val, His, Phe, Met or Gln;~~

~~Xaa at position 51 is Asn, Arg, Met, Pro, Ser, Thr, or His;~~

~~Xaa at position 52 is Asn, His, Arg, Leu, Gly, Ser, or Thr;~~

~~Xaa at position 53 is Leu, Thr, Ala, Gly, Glu, Pro, Lys, Ser, or Met;~~

~~Xaa at position 54 is Arg, Asp, Ile, Ser, Val, Thr, Gln, Asn, Lys, His, Ala or Leu;~~

~~Xaa at position 55 is Arg, Thr, Val, Ser, Leu, or Gly;~~

~~Xaa at position 56 is Pro, Gly, Cys, Ser, Gln, Glu, Arg, His, Thr, Ala, Tyr, Phe, Leu, Val or Lys;~~

~~Xaa at position 57 is Asn or Gly;~~

~~Xaa at position 58 is Leu, Ser, Asp, Arg, Gln, Val, or Cys;~~

~~Xaa at position 59 is Glu Tyr, His, Leu, Pro, or Arg;~~

~~Xaa at position 60 is Ala, Ser, Pro, Tyr, Asn, or Thr;~~

~~Xaa at position 61 is Phe, Asn, Glu, Pro, Lys, Arg, or Ser;~~

~~Xaa at position 62 is Asn His, Val, Arg, Pro, Thr, Asp, or Ile;~~

~~Xaa at position 63 is Arg, Tyr, Trp, Lys, Ser, His, Pro, or Val;~~

~~Xaa at position 64 is Ala, Asn, Pro, Ser, or Lys;~~

~~Xaa at position 65 is Val, Thr, Pro, His, Leu, Phe, or Ser;~~

~~Xaa at position 66 is Lys, Ile, Arg, Val, Asn, Glu, or Ser;~~

~~Xaa at position 67 is Ser, Ala, Phe, Val, Gly, Asn, Ile, Pro, or His;~~

~~Xaa at position 68 is Leu, Val, Trp, Ser, Ile, Phe, Thr, or His;~~

~~Xaa at position 69 is Gln, Ala, Pro, Thr, Glu, Arg, Trp, Gly, or Leu;~~

~~Xaa at position 70 is Asn, Leu, Val, Trp, Pro, or Ala;~~

~~Xaa at position 71 is Ala, Met, Leu, Pro, Arg, Glu, Thr, Gln, Trp, or Asn;~~

~~Xaa at position 72 is Ser, Glu, Met, Ala, His, Asn, Arg, or Asp;~~

~~Xaa at position 73 is Ala, Glu, Asp, Leu, Ser, Gly, Thr, or Arg;~~

~~Xaa at position 74 is Ile, Met, Thr, Pro, Arg, Gly, Ala;~~

~~Xaa at position 75 is Glu, Lys, Gly, Asp, Pro, Trp, Arg, Ser, Gln, or Leu;~~

~~Xaa at position 76 is Ser, Val, Ala, Asn, Trp, Glu, Pro, Gly, or Asp;~~

~~Xaa at position 77 is Ile, Ser, Arg, Thr, or Leu;~~

~~Xaa at position 78 is Leu, Ala, Ser, Glu, Phe, Gly, or Arg;~~

~~Xaa at position 79 is Lys, Thr, Asn, Met, Arg, Ile, Gly, or Asp;~~

~~Xaa at position 80 is Asn, Trp, Val, Gly, Thr, Leu, Glu, or Arg;~~

~~Xaa at position 81 is Leu, Gln, Gly, Ala, Trp, Arg, Val, or Lys;~~

~~Xaa at position 82 is Leu, Gln, Lys, Trp, Arg, Asp, Glu, Asn, His, Thr, Ser, Ala, Tyr, Phe, Ile, Met or Val;~~
~~Xaa at position 83 is Pro, Ala, Thr, Trp, Arg, or Met;~~
~~Xaa at position 84 is Cys, Glu, Gly, Arg, Met, or Val;~~
~~Xaa at position 85 is Leu, Asn, Val, or Gln;~~
~~Xaa at position 86 is Pro, Cys, Arg, Ala, or Lys;~~
~~Xaa at position 87 is Leu, Ser, Trp, or Gly;~~
~~Xaa at position 88 is Ala, Lys, Arg, Val, or Trp;~~
~~Xaa at position 89 is Thr, Asp, Cys, Leu, Val, Glu, His, Asn, or Ser;~~
~~Xaa at position 90 is Ala, Pro, Ser, Thr, Gly, Asp, Ile, or Met;~~
~~Xaa at position 91 is Ala, Pro, Ser, Thr, Phe, Leu, Asp, or His;~~
~~Xaa at position 92 is Pro, Phe, Arg, Ser, Lys, His, Ala, Gly, Ile or Leu;~~
~~Xaa at position 93 is Thr, Asp, Ser, Asn, Pro, Ala, Leu, or Arg;~~
~~Xaa at position 94 is Arg, Ile, Ser, Glu, Leu, Val, Gln, Lys, His, Ala, or Pro;~~
~~Xaa at position 95 is His, Gln, Pro, Arg, Val, Leu, Gly, Thr, Asn, Lys, Ser, Ala, Trp, Phe, Ile, or Tyr;~~
~~Xaa at position 96 is Pro, Lys, Tyr, Gly, Ile, or Thr;~~
~~Xaa at position 97 is Ile, Val, Lys, Ala, or Asn;~~
~~Xaa at position 98 is His, Ile, Asn, Leu, Asp, Ala, Thr, Glu, Gln, Ser, Phe, Met, Val, Lys, Arg, Tyr or Pro;~~
~~Xaa at position 99 is Ile, Leu, Arg, Asp, Val, Pro, Gln, Gly, Ser, Phe, or His;~~
~~Xaa at position 100 is Lys, Tyr, Leu, His, Arg, Ile, Ser, Gln, or Pro;~~
~~Xaa at position 101 is Asp, Pro, Met, Lys, His, Thr, Val,~~

~~Tyr, Glu, Asn, Ser, Ala, Gly, Ile, Leu, or Gln;~~
~~Xaa at position 102 is Gly, Leu, Glu, Lys, Ser, Tyr, or Pro;~~
~~Xaa at position 103 is Asp, or Ser;~~
~~Xaa at position 104 is Trp, Val, Cys, Tyr, Thr, Met, Pro, Leu, Gln, Lys, Ala, Phe, or Gly;~~
~~Xaa at position 105 is Asn, Pro, Ala, Phe, Ser, Trp, Gln, Tyr, Leu, Lys, Ile, Asp, or His;~~
~~Xaa at position 106 is Glu, Ser, Ala, Lys, Thr, Ile, Gly, or Pro;~~
~~Xaa at position 108 is Arg, Lys, Asp, Leu, Thr, Ile, Gln, His, Ser, Ala or Pro;~~
~~Xaa at position 109 is Arg, Thr, Pro, Glu, Tyr, Leu, Ser, or Gly;~~
~~Xaa at position 110 is Lys, Ala, Asn, Thr, Leu, Arg, Gln, His, Glu, Ser, Ala, or Trp;~~
~~Xaa at position 111 is Leu, Ile, Arg, Asp, or Met;~~
~~Xaa at position 112 is Thr, Val, Gln, Tyr, Glu, His, Ser, or Phe;~~
~~Xaa at position 113 is Phe, Ser, Cys, His, Gly, Trp, Tyr, Asp, Lys, Leu, Ile, Val or Asn;~~
~~Xaa at position 114 is Tyr, Cys, His, Ser, Trp, Arg, or Leu;~~
~~Xaa at position 115 is Leu, Asn, Val, Pro, Arg, Ala, His, Thr, Trp, or Met;~~
~~Xaa at position 116 is Lys, Leu, Pro, Thr, Met, Asp, Val, Glu, Arg, Trp, Ser, Asn, His, Ala, Tyr, Phe, Gln, or Ile;~~
~~Xaa at position 117 is Thr, Ser, Asn, Ile, Trp, Lys, or Pro;~~
~~Xaa at position 118 is Leu, Ser, Pro, Ala, Glu, Cys, Asp, or Tyr;~~

~~Xaa at position 119 is Glu, Ser, Lys, Pro, Leu, Thr, Tyr, or Arg;~~
~~Xaa at position 120 is Asn, Ala, Pro, Leu, His, Val, or Gln;~~
~~Xaa at position 121 is Ala, Ser, Ile, Asn, Pro, Lys, Asp, or Gly;~~
~~Xaa at position 122 is Gln, Ser, Met, Trp, Arg, Phe, Pro, His, Ile, Tyr, or Cys;~~
~~Xaa at position 123 is Ala, Met, Glu, His, Ser, Pro, Tyr, or Leu;~~

~~and which can additionally have Met preceding the amino acid in position 1; and wherein from 1 to 14 amino acids can be deleted from the N-terminus and/or from 1 to 15 amino acids can be deleted from the C-terminus; and wherein from 4 to 44 of the amino acids designated by Xaa are different from the corresponding amino acids of native (1-133) human interleukin-3;~~

~~a colony stimulating factor; and~~
~~at least one non-toxic pharmaceutically acceptable carrier.~~

2(withdrawn). ~~A composition, comprising:~~
~~A human interleukin-3 mutant polypeptide of the Formula:~~

~~Ala Pro Met Thr Gln Thr Thr Ser Leu Lys Thr Ser Trp Val Asn~~
~~1 5 10 15~~

~~Cys Xaa Xaa Xaa Ile Xaa Glu Xaa Xaa Xaa Xaa Leu Lys Xaa Xaa~~
~~20 25 30~~

~~Xaa Xaa Xaa Xaa Xaa Asp Xaa Xaa Asn Leu Asn Xaa Glu Xaa Xaa~~

~~35 40 45~~

~~Xaa Ile Leu Met Xaa Xaa Asn Leu Xaa Xaa Xaa Asn Leu Glu Xaa~~
~~50 55 60~~

~~Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Ile Glu~~
~~65 70 75~~

~~Xaa Xaa Leu Xaa Xaa Leu Xaa Xaa Cys Xaa Pro Xaa Xaa Thr Ala~~
~~80 85 90~~

~~Xaa Pro Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Asp Xaa Xaa~~
~~95 100 105~~

~~Xaa Phe Xaa Xaa Lys Leu Xaa Phe Xaa Xaa Xaa Xaa Leu Glu Xaa~~
~~110 115 120~~

~~Xaa Xaa Xaa Gln Gln Thr Thr Leu Ser Leu Ala Ile Phe [SEQ ID NO:2]~~
~~125 130~~

~~wherein~~
~~Xaa at position 17 is Ser, Gly, Asp, Met, or Gln;~~
~~Xaa at position 18 is Asn, His, or Ile;~~
~~Xaa at position 19 is Met or Ile;~~
~~Xaa at position 21 is Asp or Glu;~~
~~Xaa at position 23 is Ile, Ala, Leu, or Gly;~~
~~Xaa at position 24 is Ile, Val, or Leu;~~
~~Xaa at position 25 is Thr, His, Gln, or Ala;~~
~~Xaa at position 26 is His or Ala;~~
~~Xaa at position 29 is Gln, Asn, or Val;~~
~~Xaa at position 30 is Pro, Gly, or Gln;~~

~~Xaa at position 31 is Pro, Asp, Gly, or Gln;~~
~~Xaa at position 32 is Leu, Arg, Gln, Asn, Gly, Ala, or Glu;~~
~~Xaa at position 33 is Pro or Glu;~~
~~Xaa at position 34 is Leu, Val, Gly, Ser, Lys, Ala, Arg, Gln, Glu, Ile, Phe, Thr or Met;~~
~~Xaa at position 35 is Leu, Ala, Asn, Pro, Gln, or Val;~~
~~Xaa at position 37 is Phe, Ser, Pro, or Trp;~~
~~Xaa at position 38 is Asn or Ala;~~
~~Xaa at position 42 is Gly, Asp, Ser, Cys, Ala, Asn, Ile, Leu, Met, Tyr or Arg;~~
~~Xaa at position 44 is Asp or Glu;~~
~~Xaa at position 45 is Gln, Val, Met, Leu, Thr, Ala, Asn, Glu, Ser or Lys;~~
~~Xaa at position 46 is Asp, Phe, Ser, Thr, Ala, Asn Gln, Glu, His, Ile, Lys, Tyr, Val or Cys;~~
~~Xaa at position 50 is Glu, Ala, Asn, Ser or Asp;~~
~~Xaa at position 51 is Asn, Arg, Met, Pro, Ser, Thr, or His;~~
~~Xaa at position 54 is Arg or Ala;~~
~~Xaa at position 55 is Arg, Thr, Val, Leu, or Gly;~~
~~Xaa at position 56 is Pro, Gly, Ser, Gln, Ala, Arg, Asn, Glu, Leu, Thr, Val or Lys;~~
~~Xaa at position 60 is Ala or Ser;~~
~~Xaa at position 62 is Asn, Pro, Thr, or Ile;~~
~~Xaa at position 63 is Arg or Lys;~~
~~Xaa at position 64 is Ala or Asn;~~
~~Xaa at position 65 is Val or Thr;~~
~~Xaa at position 66 is Lys or Arg;~~
~~Xaa at position 67 is Ser, Phe, or His;~~
~~Xaa at position 68 is Leu, Ile, Phe, or His;~~

~~Xaa at position 69 is Gln, Ala, Pro, Thr, Glu, Arg, or Gly;~~

~~Xaa at position 71 is Ala, Pro, or Arg;~~

~~Xaa at position 72 is Ser, Glu, Arg, or Asp;~~

~~Xaa at position 73 is Ala or Leu;~~

~~Xaa at position 76 is Ser, Val, Ala, Asn, Glu, Pro, or Gly;~~

~~Xaa at position 77 is Ile or Leu;~~

~~Xaa at position 79 is Lys, Thr, Gly, Asn, Met, Arg, Ile, Gly, or Asp;~~

~~Xaa at position 80 is Asn, Gly, Glu, or Arg;~~

~~Xaa at position 82 is Leu, Gln, Trp, Arg, Asp, Ala, Asn, Glu, His, Ile, Met, Phe, Ser, Thr, Tyr or Val;~~

~~Xaa at position 83 is Pro or Thr;~~

~~Xaa at position 85 is Leu or Val;~~

~~Xaa at position 87 is Leu or Ser;~~

~~Xaa at position 88 is Ala or Trp;~~

~~Xaa at position 91 is Ala or Pro;~~

~~Xaa at position 93 is Thr, Asp, Ser, Pro, Ala, Leu, or Arg;~~

~~Xaa at position 95 is His, Pro, Arg, Val, Leu, Gly, Asn, Phe, Ser or Thr;~~

~~Xaa at position 96 is Pro or Tyr;~~

~~Xaa at position 97 is Ile or Val;~~

~~Xaa at position 98 is His, Ile, Asn, Leu, Ala, Thr, Leu, Arg, Gln, Leu, Lys, Met, Ser, Tyr, Val or Pro;~~

~~Xaa at position 99 is Ile, Leu, or Val;~~

~~Xaa at position 100 is Lys, Arg, Ile, Gln, Pro, or Ser;~~

~~Xaa at position 101 is Asp, Pro, Met, Lys, His, Thr, Pro, Asn, Ile, Leu or Tyr;~~

~~Xaa at position 104 is Trp or Leu;~~

~~Xaa at position 105 is Asn, Pro, Ala, Ser, Trp, Gln, Tyr, Leu, Lys, Ile, Asp, or His;~~
~~Xaa at position 106 is Glu or Gly;~~
~~Xaa at position 108 is Arg, Ala, or Ser;~~
~~Xaa at position 109 is Arg, Thr, Glu, Leu, or Ser;~~
~~Xaa at position 112 is Thr, Val, or Gln;~~
~~Xaa at position 114 is Tyr or Trp;~~
~~Xaa at position 115 is Leu or Ala;~~
~~Xaa at position 116 is Lys, Thr, Val, Trp, Ser, Ala, His, Met, Phe, Tyr or Ile;~~
~~Xaa at position 117 is Thr or Ser;~~
~~Xaa at position 120 is Asn, Pro, Leu, His, Val, or Gln;~~
~~Xaa at position 121 is Ala, Ser, Ile, Asn, Pro, Asp, or Gly;~~
~~Xaa at position 122 is Gln, Ser, Met, Trp, Arg, Phe, Pro, His, Ile, Tyr, or Cys;~~
~~Xaa at position 123 is Ala, Met, Glu, His, Ser, Pro, Tyr, or Leu;~~

~~and which can additionally have Met- preceding the amino acid in position 1; and wherein from 1 to 14 amino acids can be deleted from the N-terminus and/or from 1 to 15 amino acids can be deleted from the C-terminus; and wherein from 4 to 35 of the amino acids designated by Xaa are different from the corresponding amino acids of native (1-133)human interleukin-3;~~

~~A colony stimulating factor selected from the group consisting of GM-CSF, CSF-1, G-CSF, Meg-CSF (more recently referred to as c-mpl ligand), M-CSF, erythropoietin (EPO), IL-1, IL-4, IL-2, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, LIF, flt3/flk2, human growth hormone, B-cell growth factor, B-cell differentiation factor, eosinophil~~

~~differentiation factor and stem cell factor (SCF); and~~
~~At least one non-toxic pharmaceutically acceptable carrier.~~

3(withdrawn). ~~A composition of claim 2, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~Ala Pro Met Thr Gln Thr Thr Ser Leu Lys Thr Ser Trp Val Asn~~
~~1 5 10 15~~

~~Cys Xaa Xaa Met Ile Asp Glu Xaa Ile Xaa Xaa Leu Lys Xaa Xaa~~
~~20 25 30~~

~~Pro Xaa Pro Xaa Xaa Asp Phe Xaa Asn Leu Asn Xaa Glu Asp Xaa~~
~~35 40 45~~

~~Xaa Ile Leu Met Xaa Xaa Asn Leu Arg Xaa Xaa Asn Leu Glu Ala~~
~~50 55 60~~

~~Phe Xaa Arg Xaa Xaa Lys Xaa Xaa Xaa Asn Ala Ser Ala Ile Glu~~
~~65 70 75~~

~~Xaa Xaa Leu Xaa Xaa Leu Xaa Pro Cys Leu Pro Xaa Xaa Thr Ala~~
~~80 85 90~~

~~Xaa Pro Xaa Arg Xaa Pro Ile Xaa Xaa Xaa Xaa Gly Asp Trp Xaa~~
~~95 100 105~~

~~Glu Phe Xaa Xaa Lys Leu Xaa Phe Tyr Leu Xaa Xaa Leu Glu Xaa~~
~~110 115 120~~

~~Xaa Xaa Xaa Gln Gln Thr Thr Leu Ser Leu Ala Ile Phe~~

~~125 130~~

~~[SEQ ID NO:3]~~

~~wherein~~

~~Xaa at position 17 is Ser, Gly, Asp, or Gln;~~

~~Xaa at position 18 is Asn, His, or Ile;~~

~~Xaa at position 23 is Ile, Ala, Leu, or Gly;~~

~~Xaa at position 25 is Thr, His, or Gln;~~

~~Xaa at position 26 is His or Ala;~~

~~Xaa at position 29 is Gln or Asn;~~

~~Xaa at position 30 is Pro or Gly;~~

~~Xaa at position 32 is Leu, Arg, Asn, or Ala;~~

~~Xaa at position 34 is Leu, Val, Ser, Ala, Arg, Gln, Glu, Ile, Phe, Thr, or Met;~~

~~Xaa at position 35 is Leu, Ala, Asn, or Pro;~~

~~Xaa at position 38 is Asn or Ala;~~

~~Xaa at position 42 is Gly, Asp, Ser, Ala, Asn, Ile, Leu, Met, Tyr or Arg;~~

~~Xaa at position 45 is Gln, Val, Met, Leu, Ala, Asn, Glu, or Lys;~~

~~Xaa at position 46 is Asp, Phe, Ser, Gln, Glu, His, Val or Thr;~~

~~Xaa at position 50 is Glu Asn, Ser or Asp;~~

~~Xaa at position 51 is Asn, Arg, Pro, Thr, or His;~~

~~Xaa at position 55 is Arg, Leu, or Gly;~~

~~Xaa at position 56 is Pro, Gly, Ser, Ala, Asn, Val, Leu or Gln;~~

~~Xaa at position 62 is Asn, Pro, or Thr;~~

~~Xaa at position 64 is Ala or Asn;~~

~~Xaa at position 65 is Val or Thr;~~

~~Xaa at position 67 is Ser or Phe;~~

~~Xaa at position 68 is Leu or Phe;~~
~~Xaa at position 69 is Gln, Ala, Glu, or Arg;~~
~~Xaa at position 76 is Ser, Val, Asn, Pro, or Gly;~~
~~Xaa at position 77 is Ile or Leu;~~
~~Xaa at position 79 is Lys, Gly, Asn, Met, Arg, Ile, or Gly;~~
~~Xaa at position 80 is Asn, Gly, Glu, or Arg;~~
~~Xaa at position 82 is Leu, Gln, Trp, Arg, Asp, Asn, Glu, His, Met, Phe, Ser, Thr, Tyr or Val;~~
~~Xaa at position 87 is Leu or Ser;~~
~~Xaa at position 88 is Ala or Trp;~~
~~Xaa at position 91 is Ala or Pro;~~
~~Xaa at position 93 is Thr, Asp, or Ala;~~
~~Xaa at position 95 is His, Pro, Arg, Val, Gly, Asn, Ser or Thr;~~
~~Xaa at position 98 is His, Ile, Asn, Ala, Thr, Gln, Glu, Lys, Met, Ser, Tyr, Val or Leu;~~
~~Xaa at position 99 is Ile or Leu;~~
~~Xaa at position 100 is Lys or Arg;~~
~~Xaa at position 101 is Asp, Pro, Met, Lys, Thr, His, Pro, Asn, Ile, Leu or Tyr;~~
~~Xaa at position 105 is Asn, Pro, Ser, Ile or Asp;~~
~~Xaa at position 108 is Arg, Ala, or Ser;~~
~~Xaa at position 109 is Arg, Thr, Glu, Leu, or Ser;~~
~~Xaa at position 112 is Thr or Gln;~~
~~Xaa at position 116 is Lys, Val, Trp, Ala, His, Phe, Tyr or Ile;~~
~~Xaa at position 117 is Thr or Ser;~~
~~Xaa at position 120 is Asn, Pro, Leu, His, Val, or Gln;~~
~~Xaa at position 121 is Ala, Ser, Ile, Pro, or Asp;~~
~~Xaa at position 122 is Gln, Met, Trp, Phe, Pro, His, Ile,~~

~~or Tyr;~~
~~Xaa at position 123 is Ala, Met, Glu, Ser, or Leu;~~

~~and which can additionally have Met- preceding the amino acid in position 1; and wherein from 1 to 14 amino acids can be deleted from the N-terminus and/or from 1 to 15 amino acids can be deleted from the C-terminus; and wherein from 4 to 44 of the amino acids designated by Xaa are different from the corresponding amino acids of native (1-133)human interleukin-3.~~

4(withdrawn). ~~A composition of claim 3, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~Xaa at position 42 is Gly, Asp, Ser, Ile, Leu, Met, Tyr, or Ala;~~
~~Xaa at position 45 is Gln, Val, Met or Asn;~~
~~Xaa at position 46 is Asp, Ser, Gln, His or Val;~~
~~Xaa at position 50 is Glu or Asp;~~
~~Xaa at position 51 is Asn, Pro or Thr;~~
~~Xaa at position 62 is Asn or Pro;~~
~~Xaa at position 76 is Ser, or Pro;~~
~~Xaa at position 82 is Leu, Trp, Asp, Asn Glu, His, Phe, Ser or Tyr;~~
~~Xaa at position 95 is His, Arg, Thr, Asn or Ser;~~
~~Xaa at position 98 is His, Ile, Leu, Ala, Gln, Lys, Met, Ser, Tyr or Val;~~
~~Xaa at position 100 is Lys or Arg;~~
~~Xaa at position 101 is Asp, Pro, His, Asn, Ile or Leu;~~
~~Xaa at position 105 is Asn, or Pro;~~
~~Xaa at position 108 is Arg, Ala, or Ser;~~
~~Xaa at position 116 is Lys, Val, Trp, Ala, His, Phe, or~~

~~Tyr;~~
~~Xaa at position 121 is Ala, or Ile;~~
~~Xaa at position 122 is Gln, or Ile; and~~
~~Xaa at position 123 is Ala, Met or Glu.~~

5(withdrawn). ~~A composition, comprising:~~

~~A human interleukin-3 mutant polypeptide of the Formula:~~

~~Asn Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~1 5 10 15~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Xaa Xaa~~
~~20 25 30~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~35 40 45~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~50 55 60~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~65 70 75~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~80 85 90~~

~~Xaa Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa~~
~~95 100 105~~

~~Xaa Xaa Xaa Xaa Gln Gln [SEQ ID NO:4]~~

~~110~~

~~wherein~~

~~Xaa at position 3 is Ser, Lys, Gly, Asp, Met, Gln, or Arg;~~

~~Xaa at position 4 is Asn, His, Leu, Ile, Phe, Arg, or Gln;~~

~~Xaa at position 5 is Met, Phe, Ile, Arg, Gly, Ala, or Cys;~~

~~Xaa at position 6 is Ile, Cys, Gln, Glu, Arg, Pro, or Ala;~~

~~Xaa at position 7 is Asp, Phe, Lys, Arg, Ala, Gly, Glu, Gln, Asn, Thr, Ser or Val;~~

~~Xaa at position 8 is Glu, Trp, Pro, Ser, Ala, His, Asp, Asn, Gln, Leu, Val, or Gly;~~

~~Xaa at position 9 is Ile, Val, Ala, Leu, Gly, Trp, Lys, Phe, Leu, Ser, or Arg;~~

~~Xaa at position 10 is Ile, Gly, Val, Arg, Ser, Phe, or Leu;~~

~~Xaa at position 11 is Thr, His, Gly, Gln, Arg, Pro, or Ala;~~

~~Xaa at position 12 is His, Thr, Phe, Gly, Arg, Ala, or Trp;~~

~~Xaa at position 13 is Leu, Gly, Arg, Thr, Ser, or Ala;~~

~~Xaa at position 14 is Lys, Arg, Leu, Gln, Gly, Pro, Val or Trp;~~

~~Xaa at position 15 is Gln, Asn, Leu, Pro, Arg, or Val;~~

~~Xaa at position 16 is Pro, His, Thr, Gly, Asp, Gln, Ser, Leu, or Lys;~~

~~Xaa at position 17 is Pro, Asp, Gly, Ala, Arg, Leu, or Gln;~~

~~Xaa at position 18 is Leu, Val, Arg, Gln, Asn, Gly, Ala, or Glu;~~

~~Xaa at position 19 is Pro, Leu, Gln, Ala, Thr, or Glu;~~

~~Xaa at position 20 is Leu, Val, Gly, Ser, Lys, Glu, Gln,~~

~~Thr, Arg, Ala, Phe, Ile or Met;~~
~~Xaa at position 21 is Leu, Ala, Gly, Asn, Pro, Gln, or Val;~~
~~Xaa at position 22 is Asp, Leu, or Val;~~
~~Xaa at position 23 is Phe, Ser, Pro, Trp, or Ile;~~
~~Xaa at position 24 is Asn, or Ala;~~
~~Xaa at position 26 is Leu, Trp, or Arg;~~
~~Xaa at position 27 is Asn, Cys, Arg, Leu, His, Met, Pro;~~
~~Xaa at position 28 is Gly, Asp, Ser, Cys, Ala, Lys, Asn, Thr, Leu, Val, Glu, Phe, Tyr, Ile or Met;~~
~~Xaa at position 29 is Glu, Asn, Tyr, Leu, Phe, Asp, Ala, Cys, Gln, Arg, Thr, Gly or Ser;~~
~~Xaa at position 30 is Asp, Ser, Leu, Arg, Lys, Thr,Met, Trp, Glu, Asn, Gln, Ala or Pro;~~
~~Xaa at position 31 is Gln, Pro, Phe, Val, Met, Leu, Thr, Lys, Asp, Asn, Arg, Ser, Ala, Ile, Glu, His or Trp;~~
~~Xaa at position 32 is Asp, Phe, Ser, Thr, Cys, Glu, Asn, Gln, Lys, His, Ala, Tyr, Ile, Val or Gly;~~
~~Xaa at position 33 is Ile, Gly, Val, Ser, Arg, Pro, or His;~~
~~Xaa at position 34 is Leu, Ser, Cys, Arg, Ile, His, Phe, Glu, Lys, Thr, Ala, Met, Val or Asn;~~
~~Xaa at position 35 is Met, Arg, Ala, Gly, Pro, Asn, His, or Asp;~~
~~Xaa at position 36 is Glu, Leu, Thr, Asp, Tyr, Lys, Asn, Ser, Ala, Ile, Val, His, Phe, Met or Gln;~~
~~Xaa at position 37 is Asn, Arg, Met, Pro, Ser, Thr, or His;~~
~~Xaa at position 38 is Asn, His, Arg, Leu, Gly, Ser, or Thr;~~
~~Xaa at position 39 is Leu, Thr, Ala, Gly, Glu, Pro, Lys,~~

~~Ser, Met, or;~~
~~Xaa at position 40 is Arg, Asp, Ile, Ser, Val, Thr, Gln, Asn, Lys, His, Ala or Leu;~~
~~Xaa at position 41 is Arg, Thr, Val, Ser, Leu, or Gly;~~
~~Xaa at position 42 is Pro, Gly, Cys, Ser, Gln, Glu, Arg, His, Thr, Ala, Tyr, Phe, Leu, Val or Lys;~~
~~Xaa at position 43 is Asn or Gly;~~
~~Xaa at position 44 is Leu, Ser, Asp, Arg, Gln, Val, or Cys;~~
~~Xaa at position 45 is Glu Tyr, His, Leu, Pro, or Arg;~~
~~Xaa at position 46 is Ala, Ser, Pro, Tyr, Asn, or Thr;~~
~~Xaa at position 47 is Phe, Asn, Glu, Pro, Lys, Arg, or Ser;~~
~~Xaa at position 48 is Asn, His, Val, Arg, Pro, Thr, Asp, or Ile;~~
~~Xaa at position 49 is Arg, Tyr, Trp, Lys, Ser, His, Pro, or Val;~~
~~Xaa at position 50 is Ala, Asn, Pro, Ser, or Lys;~~
~~Xaa at position 51 is Val, Thr, Pro, His, Leu, Phe, or Ser;~~
~~Xaa at position 52 is Lys, Ile, Arg, Val, Asn, Glu, or Ser;~~
~~Xaa at position 53 is Ser, Ala, Phe, Val, Gly, Asn, Ile, Pro, or His;~~
~~Xaa at position 54 is Leu, Val, Trp, Ser, Ile, Phe, Thr, or His;~~
~~Xaa at position 55 is Gln, Ala, Pro, Thr, Glu, Arg, Trp, Gly, or Leu;~~
~~Xaa at position 56 is Asn, Leu, Val, Trp, Pro, or Ala;~~
~~Xaa at position 57 is Ala, Met, Leu, Pro, Arg, Glu, Thr, Gln, Trp, or Asn;~~

~~Xaa at position 58 is Ser, Glu, Met, Ala, His, Asn, Arg, or Asp;~~
~~Xaa at position 59 is Ala, Glu, Asp, Leu, Ser, Gly, Thr, or Arg;~~
~~Xaa at position 60 is Ile, Met, Thr, Pro, Arg, Gly, Ala;~~
~~Xaa at position 61 is Glu, Lys, Gly, Asp, Pro, Trp, Arg, Ser, Gln, or Leu;~~
~~Xaa at position 62 is Ser, Val, Ala, Asn, Trp, Glu, Pro, Gly, or Asp;~~
~~Xaa at position 63 is Ile, Ser, Arg, Thr, or Leu;~~
~~Xaa at position 64 is Leu, Ala, Ser, Glu, Phe, Gly, or Arg;~~
~~Xaa at position 65 is Lys, Thr, Gly, Asn, Met, Arg, Ile, or Asp;~~
~~Xaa at position 66 is Asn, Trp, Val, Gly, Thr, Leu, Glu, or Arg;~~
~~Xaa at position 67 is Leu, Gln, Gly, Ala, Trp, Arg, Val, or Lys;~~
~~Xaa at position 68 is Leu, Gln, Lys, Trp, Arg, Asp, Glu, Asn, His, Thr, Ser, Ala, Tyr, Phe, Ile, Met or Val;~~
~~Xaa at position 69 is Pro, Ala, Thr, Trp, Arg, or Met;~~
~~Xaa at position 70 is Cys, Glu, Gly, Arg, Met, or Val;~~
~~Xaa at position 71 is Leu, Asn, Val, or Gln;~~
~~Xaa at position 72 is Pro, Cys, Arg, Ala, or Lys;~~
~~Xaa at position 73 is Leu, Ser, Trp, or Gly;~~
~~Xaa at position 74 is Ala, Lys, Arg, Val, or Trp;~~
~~Xaa at position 75 is Thr, Asp, Cys, Leu, Val, Glu, His, Asn, or Ser;~~
~~Xaa at position 76 is Ala, Pro, Ser, Thr, Gly, Asp, Ile, or Met;~~
~~Xaa at position 77 is Ala, Pro, Ser, Thr, Phe, Leu, Asp,~~

~~or His;~~

~~Xaa at position 78 is Pro, Phe, Arg, Ser, Lys, His, Ala, Gly, Ile or Leu;~~

~~Xaa at position 79 is Thr, Asp, Ser, Asn, Pro, Ala, Leu, or Arg;~~

~~Xaa at position 80 is Arg, Ile, Ser, Glu, Leu, Val, Gln, Lys, His, Ala or Pro;~~

~~Xaa at position 81 is His, Gln, Pro, Arg, Val, Leu, Gly, Thr, Asn, Lys, Ser, Ala, Trp, Phe, Ile or Tyr;~~

~~Xaa at position 82 is Pro, Lys, Tyr, Gly, Ile, or Thr;~~

~~Xaa at position 83 is Ile, Val, Lys, Ala, or Asn;~~

~~Xaa at position 84 is His, Ile, Asn, Leu, Asp, Ala, Thr, Glu, Gln, Ser, Phe, Met, Val, Lys, Arg, Tyr or Pro;~~

~~Xaa at position 85 is Ile, Leu, Arg, Asp, Val, Pro, Gln, Gly, Ser, Phe, or His;~~

~~Xaa at position 86 is Lys, Tyr, Leu, His, Arg, Ile, Ser, Gln, Pro;~~

~~Xaa at position 87 is Asp, Pro, Met, Lys, His, Thr, Val, Tyr, Glu, Asn, Ser, Ala, Gly, Ile, Leu or Gln;~~

~~Xaa at position 88 is Gly, Leu, Glu, Lys, Ser, Tyr, or Pro;~~

~~Xaa at position 89 is Asp, or Ser;~~

~~Xaa at position 90 is Trp, Val, Cys, Tyr, Thr, Met, Pro, Leu, Gln, Lys, Ala, Phe, or Gly;~~

~~Xaa at position 91 is Asn, Pro, Ala, Phe, Ser, Trp, Gln, Tyr, Leu, Lys, Ile, Asp, or His;~~

~~Xaa at position 92 is Glu, Ser, Ala, Lys, Thr, Ile, Gly, or Pro;~~

~~Xaa at position 94 is Arg, Lys, Asp, Leu, Thr, Ile, Gln, His, Ser, Ala, or Pro;~~

~~Xaa at position 95 is Arg, Thr, Pro, Glu, Tyr, Leu, Ser,~~

~~or Gly;~~
~~Xaa at position 96 is Lys, Asn, Thr, Leu, Gln, Arg, His, Glu, Ser, Ala or Trp;~~
~~Xaa at position 97 is Leu, Ile, Arg, Asp, or Met;~~
~~Xaa at position 98 is Thr, Val, Gln, Tyr, Glu, His, Ser, or Phe;~~
~~Xaa at position 99 is Phe, Ser, Cys, His, Gly, Trp, Tyr, Asp, Lys, Leu, Ile, Val or Asn;~~
~~Xaa at position 100 is Tyr, Cys, His, Ser, Trp, Arg, or Leu;~~
~~Xaa at position 101 is Leu, Asn, Val, Pro, Arg, Ala, His, Thr, Trp, or Met;~~
~~Xaa at position 102 is Lys, Leu, Pro, Thr, Met, Asp, Val, Glu, Arg, Trp, Ser, Asn, His, Ala, Tyr, Phe, Gln, or Ile;~~
~~Xaa at position 103 is Thr, Ser, Asn, Ile, Trp, Lys, or Pro;~~
~~Xaa at position 104 is Leu, Ser, Pro, Ala, Glu, Cys, Asp, or Tyr;~~
~~Xaa at position 105 is Glu, Ser, Lys, Pro, Leu, Thr, Tyr, or Arg;~~
~~Xaa at position 106 is Asn, Ala, Pro, Leu, His, Val, or Gln;~~
~~Xaa at position 107 is Ala, Ser, Ile, Asn, Pro, Lys, Asp, or Gly;~~
~~Xaa at position 108 is Gln, Ser, Met, Trp, Arg, Phe, Pro, His, Ile, Tyr, or Cys;~~
~~Xaa at position 109 is Ala, Met, Glu, His, Ser, Pro, Tyr, or Leu;~~

~~and which can additionally have Met- or Met-Ala- preceding the~~

~~amino acid in position 1; and wherein from 4 to 44 of the amino acids designated by Xaa are different from the corresponding native amino acids of (1-133) human interleukin-3;~~

~~A colony stimulating factor selected from the group consisting of GM-CSF, CSF-1, G-CSF, Meg-CSF (more recently referred to as c-mpl ligand), M-CSF, erythropoietin (EPO), IL-1, IL-4, IL-2, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, LIF, flt3/flk2, human growth hormone, B-cell growth factor, B-cell differentiation factor, eosinophil differentiation factor and stem cell factor (SCF); and~~

~~At least one non-toxic pharmaceutically acceptable carrier.~~

6(withdrawn). ~~A composition of claim 5, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~Asn Cys Xaa Xaa Xaa Ile Xaa Glu Xaa Xaa Xaa Xaa Leu Lys Xaa~~
~~1 5 10 15~~

~~Xaa Xaa Xaa Xaa Xaa Xaa Asp Xaa Xaa Asn Leu Asn Xaa Glu Xaa~~
~~20 25 30~~

~~Xaa Xaa Ile Leu Met Xaa Xaa Asn Leu Xaa Xaa Xaa Asn Leu Glu~~
~~35 40 45~~

~~Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asn Xaa Xaa Xaa Ile~~
~~50 55 60~~

~~Glu Xaa Xaa Leu Xaa Xaa Leu Xaa Xaa Cys Xaa Pro Xaa Xaa Thr~~
~~65 70 75~~

~~Ala Xaa Pro Xaa Arg Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Asp Xaa~~

~~80 85 90~~

~~Xaa Xaa Phe Xaa Xaa Lys Leu Xaa Phe Xaa Xaa Xaa Xaa Leu Glu~~
~~95 100 105~~

~~Xaa Xaa Xaa Xaa Gln Gln [SEQ ID NO:5]~~
~~110~~

~~wherein~~
~~Xaa at position 3 is Ser, Gly, Asp, Met, or Gln;~~
~~Xaa at position 4 is Asn, His, or Ile;~~
~~Xaa at position 5 is Met or Ile;~~
~~Xaa at position 7 is Asp or Glu;~~
~~Xaa at position 9 is Ile, Ala, Leu, or Gly;~~
~~Xaa at position 10 is Ile, Val, or Leu;~~
~~Xaa at position 11 is Thr, His, Gln, or Ala;~~
~~Xaa at position 12 is His or Ala;~~
~~Xaa at position 15 is Gln, Asn, or Val;~~
~~Xaa at position 16 is Pro, Gly, or Gln;~~
~~Xaa at position 17 is Pro, Asp, Gly, or Gln;~~
~~Xaa at position 18 is Leu, Arg, Gln, Asn, Gly, Ala, or Glu;~~
~~Xaa at position 19 is Pro or Glu;~~
~~Xaa at position 20 is Leu, Val, Gly, Ser, Lys, Ala, Arg, Gln, Glu, Ile, Phe, Thr or Met;~~
~~Xaa at position 21 is Leu, Ala, Asn, Pro, Gln, or Val;~~
~~Xaa at position 23 is Phe, Ser, Pro, or Trp;~~
~~Xaa at position 24 is Asn or Ala;~~
~~Xaa at position 28 is Gly, Asp, Ser, Cys, Ala, Asn, Ile, Leu, Met Tyr or Arg;~~
~~Xaa at position 30 is Asp or Glu;~~

~~Xaa at position 31 is Gln, Val, Met, Leu, Thr, Ala, Asn, Glu, Ser or Lys;~~

~~Xaa at position 32 is Asp, Phe, Ser, Thr, Ala, Asn, Gln, Glu, His, Ile, Lys, Tyr, Val or Cys;~~

~~Xaa at position 36 is Glu, Ala, Asn, Ser or Asp;~~

~~Xaa at position 37 is Asn, Arg, Met, Pro, Ser, Thr, or His;~~

~~Xaa at position 40 is Arg or Ala;~~

~~Xaa at position 41 is Arg, Thr, Val, Leu, or Gly;~~

~~Xaa at position 42 is Pro, Gly, Ser, Gln, Ala, Arg, Asn, Glu, Leu, Thr, Val or Lys;~~

~~Xaa at position 46 is Ala or Ser;~~

~~Xaa at position 48 is Asn, Pro, Thr, or Ile;~~

~~Xaa at position 49 is Arg or Lys;~~

~~Xaa at position 50 is Ala or Asn;~~

~~Xaa at position 51 is Val or Thr;~~

~~Xaa at position 52 is Lys or Arg;~~

~~Xaa at position 53 is Ser, Phe, or His;~~

~~Xaa at position 54 is Leu, Ile, Phe, or His;~~

~~Xaa at position 55 is Gln, Ala, Pro, Thr, Glu, Arg, or Gly;~~

~~Xaa at position 57 is Ala, Pro, or Arg;~~

~~Xaa at position 58 is Ser, Glu, Arg, or Asp;~~

~~Xaa at position 59 is Ala or Leu;~~

~~Xaa at position 62 is Ser, Val, Ala, Asn, Glu, Pro, or Gly;~~

~~Xaa at position 63 is Ile or Leu;~~

~~Xaa at position 65 is Lys, Thr, Gly, Asn, Met, Arg, Ile, Gly, or Asp;~~

~~Xaa at position 66 is Asn, Gly, Glu, or Arg;~~

~~Xaa at position 68 is Leu, Gln, Trp, Arg, Asp, Ala, Asn,~~

~~Glu, His, Ile, Met, Phe, Ser, Thr, Tyr or Val;~~
~~Xaa at position 69 is Pro or Thr;~~
~~Xaa at position 71 is Leu or Val;~~
~~Xaa at position 73 is Leu or Ser;~~
~~Xaa at position 74 is Ala or Trp;~~
~~Xaa at position 77 is Ala or Pro;~~
~~Xaa at position 79 is Thr, Asp, Ser, Pro, Ala, Leu, or Arg;~~
~~Xaa at position 81 is His, Pro, Arg, Val, Leu, Gly, Asn, Phe, Ser or Thr;~~
~~Xaa at position 82 is Pro or Tyr;~~
~~Xaa at position 83 is Ile or Val;~~
~~Xaa at position 84 is His, Ile, Asn, Leu, Ala, Thr, Leu, Arg, Gln, Leu, Lys, Met, Ser, Tyr, Val or Pro;~~
~~Xaa at position 85 is Ile, Leu, or Val;~~
~~Xaa at position 86 is Lys, Arg, Ile, Gln, Pro, or Ser;~~
~~Xaa at position 87 is Asp, Pro, Met, Lys, His, Thr, Asn, Ile, Leu or Tyr;~~
~~Xaa at position 90 is Trp or Leu;~~
~~Xaa at position 91 is Asn, Pro, Ala, Ser, Trp, Gln, Tyr, Leu, Lys, Ile, Asp, or His;~~
~~Xaa at position 92 is Glu, or Gly;~~
~~Xaa at position 94 is Arg, Ala, or Ser;~~
~~Xaa at position 95 is Arg, Thr, Glu, Leu, or Ser;~~
~~Xaa at position 98 is Thr, Val, or Gln;~~
~~Xaa at position 100 is Tyr or Trp;~~
~~Xaa at position 101 is Leu or Ala;~~
~~Xaa at position 102 is Lys, Thr, Val, Trp, Ser, Ala, His, Met, Phe, Tyr or Ile;~~
~~Xaa at position 103 is Thr or Ser;~~
~~Xaa at position 106 is Asn, Pro, Leu, His, Val, or Gln;~~

~~Xaa at position 107 is Ala, Ser, Ile, Asn, Pro, Asp, or Gly;~~
~~Xaa at position 108 is Gln, Ser, Met, Trp, Arg, Phe, Pro, His, Ile, Tyr, or Cys;~~
~~Xaa at position 109 is Ala, Met, Glu, His, Ser, Pro, Tyr, or Leu;~~

~~which can additionally have Met- or Met-Ala- preceding the amino acid in position 1; and wherein from 4 to 35 of the amino acids designated by Xaa are different from the corresponding amino acids of native human interleukin-3.~~

7(withdrawn). ~~A composition of claim 6, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~Asn Cys Xaa Xaa Met Ile Asp Glu Xaa Ile Xaa Xaa Leu Lys Xaa~~
~~1 5 10 15~~

~~Xaa Pro Xaa Pro Xaa Xaa Asp Phe Xaa Asn Leu Asn Xaa Glu Asp~~
~~20 25 30~~

~~Xaa Xaa Ile Leu Met Xaa Xaa Asn Leu Arg Xaa Xaa Asn Leu Glu~~
~~35 40 45~~

~~Ala Phe Xaa Arg Xaa Xaa Lys Xaa Xaa Xaa Asn Ala Ser Ala Ile~~
~~50 55 60~~

~~Glu Xaa Xaa Leu Xaa Xaa Leu Xaa Pro Cys Leu Pro Xaa Xaa Thr~~
~~65 70 75~~

~~Ala Xaa Pro Xaa Arg Xaa Pro Ile Xaa Xaa Xaa Xaa Gly Asp Trp~~

80 85 90

Xaa Glu Phe Xaa Xaa Lys Leu Xaa Phe Tyr Leu Xaa Xaa Leu Glu
95 100 105

Xaa Xaa Xaa Xaa Gln Gln [SEQ ID NO:6]
110

wherein
Xaa at position 3 is Ser, Gly, Asp, or Gln;
Xaa at position 4 is Asn, His, or Ile;
Xaa at position 9 is Ile, Ala, Leu, or Gly;
Xaa at position 11 is Thr, His, or Gln;
Xaa at position 12 is His or Ala;
Xaa at position 15 is Gln or Asn;
Xaa at position 16 is Pro or Gly;
Xaa at position 18 is Leu, Arg, Asn, or Ala;
Xaa at position 20 is Leu, Val, Ser, Ala, Arg, Gln, Glu, Ile, Phe, Thr or Met;
Xaa at position 21 is Leu, Ala, Asn, or Pro;
Xaa at position 24 is Asn or Ala;
Xaa at position 28 is Gly, Asp, Ser, Ala, Asn, Ile, Leu, Met, Tyr or Arg;
Xaa at position 31 is Gln, Val, Met, Leu, Ala, Asn, Glu or Lys;
Xaa at position 32 is Asp, Phe, Ser, Ala, Gln, Glu, His, Val or Thr;
Xaa at position 36 is Glu, Asn, Ser or Asp;
Xaa at position 37 is Asn, Arg, Pro, Thr, or His;
Xaa at position 41 is Arg, Leu, or Gly;
Xaa at position 42 is Pro, Gly, Ser, Ala, Asn, Val, Leu or

~~Gln;~~
~~Xaa at position 48 is Asn, Pro, or Thr;~~
~~Xaa at position 50 is Ala or Asn;~~
~~Xaa at position 51 is Val or Thr;~~
~~Xaa at position 53 is Ser or Phe;~~
~~Xaa at position 54 is Leu or Phe;~~
~~Xaa at position 55 is Gln, Ala, Glu, or Arg;~~
~~Xaa at position 62 is Ser, Val, Asn, Pro, or Gly;~~
~~Xaa at position 63 is Ile or Leu;~~
~~Xaa at position 65 is Lys, Asn, Met, Arg, Ile, or Gly;~~
~~Xaa at position 66 is Asn, Gly, Glu, or Arg;~~
~~Xaa at position 68 is Leu, Gln, Trp, Arg, Asp, Asn, Glu, His, Met, Phe, Ser, Thr, Tyr or Val;~~
~~Xaa at position 73 is Leu or Ser;~~
~~Xaa at position 74 is Ala or Trp;~~
~~Xaa at position 77 is Ala or Pro;~~
~~Xaa at position 79 is Thr, Asp, or Ala;~~
~~Xaa at position 81 is His, Pro, Arg, Val, Gly, Asn, Ser or Thr;~~
~~Xaa at position 84 is His, Ile, Asn, Ala, Thr, Arg, Gln, Glu, Lys, Met, Ser, Tyr, Val or Leu;~~
~~Xaa at position 85 is Ile or Leu;~~
~~Xaa at position 86 is Lys or Arg;~~
~~Xaa at position 87 is Asp, Pro, Met, Lys, His, Pro, Asn, Ile, Leu or Tyr;~~
~~Xaa at position 91 is Asn, Pro, Ser, Ile or Asp;~~
~~Xaa at position 94 is Arg, Ala, or Ser;~~
~~Xaa at position 95 is Arg, Thr, Glu, Leu, or Ser;~~
~~Xaa at position 98 is Thr or Gln;~~
~~Xaa at position 102 is Lys, Val, Trp, or Ile;~~
~~Xaa at position 103 is Thr, Ala, His, Phe, Tyr or Ser;~~

~~Xaa at position 106 is Asn, Pro, Leu, His, Val, or Gln;~~
~~Xaa at position 107 is Ala, Ser, Ile, Pro, or Asp;~~
~~Xaa at position 108 is Gln, Met, Trp, Phe, Pro, His, Ile, or Tyr;~~
~~Xaa at position 109 is Ala, Met, Glu, Ser, or Leu;~~

~~and which can additionally have Met- or Met-Ala- preceding the amino acid in position 1; and wherein from 4 to 26 of the amino acids designated by Xaa are different from the corresponding amino acids of native (1-133)human interleukin-3.~~

8(withdrawn). ~~The composition of claim 7, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~Xaa at position 17 is Ser, Lys, Asp, Met, Gln, or Arg;~~
~~Xaa at position 18 is Asn, His, Leu, Ile, Phe, Arg, or Gln;~~
~~Xaa at position 19 is Met, Arg, Gly, Ala, or Cys;~~
~~Xaa at position 20 is Ile, Cys, Gln, Glu, Arg, Pro, or Ala;~~
~~Xaa at position 21 is Asp, Phe, Lys, Arg, Ala, Gly, or Val;~~
~~Xaa at position 22 is Glu, Trp, Pro, Ser, Ala, His, or Gly;~~
~~Xaa at position 23 is Ile, Ala, Gly, Trp, Lys, Leu, Ser, or Arg;~~
~~Xaa at position 24 is Ile, Gly, Arg, or Ser;~~
~~Xaa at position 25 is Thr, His, Gly, Gln, Arg, Pro, or Ala;~~
~~Xaa at position 26 is His, Thr, Phe, Gly, Ala, or Trp;~~
~~Xaa at position 27 is Leu, Gly, Arg, Thr, Ser, or Ala;~~

~~Xaa at position 28 is Lys, Leu, Gln, Gly, Pro, Val or Trp;~~
~~Xaa at position 29 is Gln, Asn, Pro, Arg, or Val;~~
~~Xaa at position 30 is Pro, His, Thr, Gly, Asp, Gln, Ser, Leu, or Lys;~~
~~Xaa at position 31 is Pro, Asp, Gly, Arg, Leu, or Gln;~~
~~Xaa at position 32 is Leu, Arg, Gln, Asn, Gly, Ala, or Glu;~~
~~Xaa at position 33 is Pro, Leu, Gln, Thr, or Glu;~~
~~Xaa at position 34 is Leu, Gly, Ser, or Lys;~~
~~Xaa at position 35 is Leu, Ala, Gly, Asn, Pro, or Gln;~~
~~Xaa at position 36 is Asp, Leu, or Val;~~
~~Xaa at position 37 is Phe, Ser, or Pro;~~
~~Xaa at position 38 is Asn, or Ala;~~
~~Xaa at position 40 is Leu, Trp, or Arg;~~
~~Xaa at position 41 is Asn, Cys, Arg, Leu, His, Met, Pro;~~
~~Xaa at position 42 is Gly, Asp, Ser, Cys, or Ala;~~
~~Xaa at position 42 is Glu, Asn, Tyr, Leu, Phe, Asp, Ala, Cys, or Ser;~~
~~Xaa at position 44 is Asp, Ser, Leu, Arg, Lys, Thr, Met, Trp, or Pro;~~
~~Xaa at position 45 is Gln, Pro, Phe, Val, Met, Leu, Thr, Lys, or Trp;~~
~~Xaa at position 46 is Asp, Phe, Ser, Thr, Cys, or Gly;~~
~~Xaa at position 47 is Ile, Gly, Ser, Arg, Pro, or His;~~
~~Xaa at position 48 is Leu, Ser, Cys, Arg, His, Phe, or Asn;~~
~~Xaa at position 49 is Met, Arg, Ala, Gly, Pro, Asn, His, or Asp;~~
~~Xaa at position 50 is Glu, Leu, Thr, Asp, or Tyr;~~
~~Xaa at position 51 is Asn, Arg, Met, Pro, Ser, Thr, or His;~~

~~Xaa at position 52 is Asn, His, Arg, Leu, Gly, Ser, or Thr;~~

~~Xaa at position 53 is Leu, Thr, Ala, Gly, Glu, Pro, Lys, Ser, or;~~

~~Xaa at position 54 is Arg, Asp, Ile, Ser, Val, Thr, Gln, or Leu;~~

~~Xaa at position 55 is Arg, Thr, Val, Ser, Leu, or Gly;~~

~~Xaa at position 56 is Pro, Gly, Cys, Ser, Gln, or Lys;~~

~~Xaa at position 57 is Asn or Gly;~~

~~Xaa at position 58 is Leu, Ser, Asp, Arg, Gln, Val, or Cys;~~

~~Xaa at position 59 is Glu Tyr, His, Leu, Pro, or Arg;~~

~~Xaa at position 60 is Ala, Ser, Tyr, Asn, or Thr;~~

~~Xaa at position 61 is Phe, Asn, Glu, Pro, Lys, Arg, or Ser;~~

~~Xaa at position 62 is Asn His, Val, Arg, Pro, Thr, or Ile;~~

~~Xaa at position 63 is Arg, Tyr, Trp, Ser, Pro, or Val;~~

~~Xaa at position 64 is Ala, Asn, Ser, or Lys;~~

~~Xaa at position 65 is Val, Thr, Pro, His, Leu, Phe, or Ser;~~

~~Xaa at position 66 is Lys, Ile, Val, Asn, Glu, or Ser;~~

~~Xaa at position 67 is Ser, Ala, Phe, Val, Gly, Asn, Ile, Pro, or His;~~

~~Xaa at position 68 is Leu, Val, Trp, Ser, Thr, or His;~~

~~Xaa at position 69 is Gln, Ala, Pro, Thr, Arg, Trp, Gly, or Leu;~~

~~Xaa at position 70 is Asn, Leu, Val, Trp, Pro, or Ala;~~

~~Xaa at position 71 is Ala, Met, Leu, Arg, Glu, Thr, Gln, Trp, or Asn;~~

~~Xaa at position 72 is Ser, Glu, Met, Ala, His, Asn, Arg, or Asp;~~

~~Xaa at position 73 is Ala, Glu, Asp, Leu, Ser, Gly, Thr, or Arg;~~

~~Xaa at position 74 is Ile, Thr, Pro, Arg, Gly, Ala;~~

~~Xaa at position 75 is Glu, Lys, Gly, Asp, Pro, Trp, Arg, Ser, or Leu;~~

~~Xaa at position 76 is Ser, Val, Ala, Asn, Trp, Glu, Pro, Gly, or Asp;~~

~~Xaa at position 77 is Ile, Ser, Arg, or Thr;~~

~~Xaa at position 78 is Leu, Ala, Ser, Glu, Gly, or Arg;~~

~~Xaa at position 79 is Lys, Thr, Gly, Asn, Met, Ile, or Asp;~~

~~Xaa at position 80 is Asn, Trp, Val, Gly, Thr, Leu, or Arg;~~

~~Xaa at position 81 is Leu, Gln, Gly, Ala, Trp, Arg, or Lys;~~

~~Xaa at position 82 is Leu, Gln, Lys, Trp, Arg, or Asp;~~

~~Xaa at position 83 is Pro, Thr, Trp, Arg, or Met;~~

~~Xaa at position 84 is Cys, Glu, Gly, Arg, Met, or Val;~~

~~Xaa at position 85 is Leu, Asn, or Gln;~~

~~Xaa at position 86 is Pro, Cys, Arg, Ala, or Lys;~~

~~Xaa at position 87 is Leu, Ser, Trp, or Gly;~~

~~Xaa at position 88 is Ala, Lys, Arg, Val, or Trp;~~

~~Xaa at position 89 is Thr, Asp, Cys, Leu, Val, Glu, His, or Asn;~~

~~Xaa at position 90 is Ala, Ser, Asp, Ile, or Met;~~

~~Xaa at position 91 is Ala, Ser, Thr, Phe, Leu, Asp, or His;~~

~~Xaa at position 92 is Pro, Phe, Arg, Ser, Lys, His, or Leu;~~

~~Xaa at position 93 is Thr, Asp, Ser, Asn, Pro, Ala, Leu, or Arg;~~

~~Xaa at position 94 is Arg, Ile, Ser, Glu, Leu, Val, or Pro;~~
~~Xaa at position 95 is His, Gln, Pro, Val, Leu, Thr or Tyr;~~
~~Xaa at position 96 is Pro, Lys, Tyr, Gly, Ile, or Thr;~~
~~Xaa at position 97 is Ile, Lys, Ala, or Asn;~~
~~Xaa at position 98 is His, Ile, Asn, Leu, Asp, Ala, Thr, or Pro;~~
~~Xaa at position 99 is Ile, Arg, Asp, Pro, Gln, Gly, Phe, or His;~~
~~Xaa at position 100 is Lys, Tyr, Leu, His, Ile, Ser, Gln, or Pro;~~
~~Xaa at position 101 is Asp, Pro, Met, Lys, His, Thr, Val, Tyr, or Gln;~~
~~Xaa at position 102 is Gly, Leu, Glu, Lys, Ser, Tyr, or Pro;~~
~~Xaa at position 103 is Asp, or Ser;~~
~~Xaa at position 104 is Trp, Val, Cys, Tyr, Thr, Met, Pro, Leu, Gln, Lys, Ala, Phe, or Gly;~~
~~Xaa at position 105 is Asn, Pro, Ala, Phe, Ser, Trp, Gln, Tyr, Leu, Lys, Ile, or His;~~
~~Xaa at position 106 is Glu, Ser, Ala, Lys, Thr, Ile, Gly, or Pro;~~
~~Xaa at position 108 is Arg, Asp, Leu, Thr, Ile, or Pro;~~
~~Xaa at position 109 is Arg, Thr, Pro, Glu, Tyr, Leu, Ser, or Gly.~~

9(withdrawn). ~~A composition of claim 8, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~1 5 10~~
~~(Met)$_m$-Ala Pro Met Thr Gln Thr Thr Ser Leu Lys Thr~~

~~15 20~~
~~Ser Trp Val Asn Cys Ser Xaa Xaa Xaa Asp Glu Ile Ile~~
~~25 30 35~~
~~Xaa His Leu Lys Xaa Pro Pro Xaa Pro Xaa Leu Asp Xaa~~
~~40 45 50~~
~~Xaa Asn Leu Asn Xaa Glu Asp Xaa Asp Ile Leu Xaa Glu~~
~~55 60~~
~~Xaa Asn Leu Arg Xaa Xaa Asn Leu Xaa Xaa Phe Xaa Xaa~~
~~65 70 75~~
~~Ala Xaa Lys Xaa Leu Xaa Asn Ala Ser Xaa Ile Glu Xaa~~
~~80 85~~
~~Ile Leu Xaa Asn Leu Xaa Pro Cys Xaa Pro Xaa Xaa Thr~~
~~90 95 100~~
~~Ala Xaa Pro Xaa Arg Xaa Pro Ile Xaa Ile Xaa Xaa Gly~~
~~105 110 115~~
~~Asp Trp Xaa Glu Phe Arg Xaa Lys Leu Xaa Phe Tyr Leu~~
~~120 125~~
~~Xaa Xaa Leu Glu Xaa Ala Gln Xaa Gln Gln Thr Thr Leu~~
~~130~~
~~Ser Leu Ala Ile Phe [SEQ ID NO:7]~~

~~wherein m is 0 or 1; Xaa at position 18 is Asn or Ile; Xaa at position 19 is Met, Ala or Ile; Xaa at position 20 is Ile, Pro or Ile; Xaa at position 23 is Ile, Ala or Leu; Xaa at position 25 is Thr or His; Xaa at position 29 is Gln, Arg, Val or Ile; Xaa at position 32 is Leu, Ala, Asn or Arg; Xaa at position 34 is Leu or Ser; Xaa at position 37 is Phe, Pro, or Ser; Xaa at position 38 is Asn or Ala; Xaa at position 42 is Gly, Ala, Ser, Asp or Asn; Xaa at position 45 is Gln, Val, or Met; Xaa at position 46 is Asp or Ser; Xaa at position 49 is Met, Ile, Leu or Asp; Xaa at position 50 is Glu or Asp; Xaa at position 51 is~~

~~Asn Arg or Ser; Xaa at position 55 is Arg, Leu, or Thr; Xaa at position 56 is Pro or Ser; Xaa at position 59 is Glu or Leu; Xaa at position 60 is Ala or Ser; Xaa at position 62 is Asn, Val or Pro; Xaa at position 63 is Arg or His; Xaa at position 65 is Val or Ser; Xaa at position 67 is Ser, Asn, His or Gln; Xaa at position 69 is Gln or Glu; Xaa at position 73 is Ala or Gly; Xaa at position 76 is Ser, Ala or Pro; Xaa at position 79 is Lys, Arg or Ser; Xaa at position 82 is Leu, Glu, Val or Trp; Xaa at position 85 is Leu or Val; Xaa at position 87 is Leu, Ser, Tyr; Xaa at position 88 is Ala or Trp; Xaa at position 91 is Ala or Pro; Xaa at position 93 is Pro or Ser; Xaa at position 95 is His or Thr; Xaa at position 98 is His, Ile, or Thr; Xaa at position 100 is Lys or Arg; Xaa at position 101 is Asp, Ala or Met; Xaa at position 105 is Asn or Glu; Xaa at position 109 is Arg, Glu or Leu; Xaa at position 112 is Thr or Gln; Xaa at position 116 is Lys, Val, Trp or Ser; Xaa at position 117 is Thr or Ser; Xaa at position 120 is Asn, Gln, or His; Xaa at position 123 is Ala or Glu; with the proviso that from four to forty-four of the amino acids designated by Xaa are different from the corresponding amino acids of native human interleukin-3.~~

10(withdrawn). ~~The composition of claim 9, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~1 5 10~~
~~$(Met_m-Ala_n)_p$-Asn Cys Ser Xaa Xaa Xaa Asp Glu Xaa Ile~~
~~15 20~~
~~Xaa His Leu Lys Xaa Pro Pro Xaa Pro Xaa Leu Asp Xaa~~
~~25 30 35~~
~~Xaa Asn Leu Asn Xaa Glu Asp Xaa Xaa Ile Leu Xaa Glu~~
~~40 45~~

~~Xaa Asn Leu Arg Xaa Xaa Asn Leu Xaa Xaa Phe Xaa Xaa~~
~~50 55 60~~
~~Ala Xaa Lys Xaa Leu Xaa Asn Ala Ser Xaa Ile Glu Xaa~~
~~65 70 75~~
~~Ile Leu Xaa Asn Xaa Xaa Pro Cys Xaa Pro Xaa Ala Thr~~
~~80 85~~
~~Ala Xaa Pro Xaa Arg Xaa Pro Ile Xaa Ile Xaa Xaa Gly~~
~~90 95 100~~
~~Asp Trp Xaa Glu Phe Arg Xaa Lys Leu Xaa Phe Tyr Leu~~
~~105 110~~
~~Xaa Xaa Leu Glu Xaa Ala Gln Xaa Gln Gln [SEQ ID NO:8]~~

~~wherein m is 0 or 1; n is 0 or 1; p is 0 or 1; Xaa at position 4 is Asn or Ile; Xaa at position 5 is Met, Ala or Ile: Xaa at position 6 is Ile, Pro or Leu; Xaa at position 9 is Ile, Ala or Leu; Xaa at position 11 is Thr or His; Xaa at position 15 is Gln, Arg, Val or Ile; Xaa at position 18 is Leu, Ala, Asn or Arg; Xaa at position 20 is Leu or Ser; Xaa at position 23 is Phe, Pro, or Ser; Xaa at position 24 is Asn or Ala; Xaa at position 28 is Gly, Ala, Ser, Asp or Asn; Xaa at position 31 is Gln, Val, or Met; Xaa at position 32 is Asp or Ser; Xaa at position 35 is Met, Ile or Asp; Xaa at position 36 is Glu or Asp; Xaa at position 37 is Asn, Arg or Ser; Xaa at position 41 is Arg, Leu, or Thr; Xaa at position 42 is Pro or Ser; Xaa at position 45 is Glu or Leu; Xaa at position 46 is Ala or Ser; Xaa at position 48 is Asn, Val or Pro; Xaa at position 49 is Arg or His; Xaa at position 51 is Val or Ser; Xaa at position 53 is Ser, Asn, His or Gln; Xaa at position 55 is Gln or Glu; Xaa at position 59 is Ala or Gly; Xaa at position 62 is Ser, Ala or Pro; Xaa at position 65 is Lys, Arg or Ser; Xaa at position 67 is Leu, Glu, or Val; Xaa at position 68 is Leu, Glu, Val or~~

~~Trp; Xaa at position 71 is Leu or Val; Xaa at position 73 is Leu, Ser or Tyr; Xaa at position 74 is Ala or Trp; Xaa at position 77 is Ala or Pro; Xaa at position 79 is Pro or Ser; Xaa at position 81 is His or Thr; Xaa at position 84 is His, Ile, or Thr; Xaa at position 86 is Lys or Arg; Xaa at position 87 is Asp, Ala or Met; Xaa at position 91 is Asn or Glu; Xaa at position 95 is Arg, Glu, Leu; Xaa at position 98 Thr or Gln; Xaa at position 102 is Lys, Val, Trp or Ser; Xaa at position 103 is Thr or Ser; Xaa at position 106 is Asn, Gln, or His; Xaa at position 109 is Ala or Glu; with the proviso that from four to forty-four of the amino acids designated by Xaa are different from the corresponding amino acids of native (15-125)human interleukin-3.~~

11(withdrawn). ~~The composition of claim 10, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:9];~~

~~Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Asn Pro Leu Leu Asp Pro Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr~~

~~Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:10];~~

~~Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Val Pro Pro Ala Pro Leu Leu Asp Ser Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:11];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:12];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:13];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:14];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:15];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:16];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Ala Ile Glu Ser Ile~~

~~Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:17];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Ser Leu Glu His Ala Gln Glu Gln Gln [SEQ ID NO:18];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:19];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:20];~~

~~Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Ser Leu Glu His Ala Gln Glu Gln Gln [SEQ ID NO:21];~~

~~Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:22];~~

~~Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Asn Pro Leu Leu Asp Pro Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:23];~~

~~Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Val Pro Pro Ala Pro Leu Leu Asp Ser Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Leu Ala Phe~~

~~Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:24];~~

~~Met Ala Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:25];~~

~~Met Ala Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:26];~~

~~Met Ala Asn Cys Ser Asn Met Ile Asp Glu Ile Ile Thr His Leu Lys Gln Pro Pro Leu Pro Leu Leu Asp Phe Asn Asn Leu Asn Gly Glu Asp Gln Asp Ile Leu Met Glu Asn Asn Leu Arg Arg Pro Asn Leu Glu Ala Phe Asn Arg Ala Val Lys Ser Leu Gln Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Ser Leu Glu His Ala Gln Glu Gln~~

~~Gln [SEQ ID NO:27];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:28];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Asn Pro Leu Leu Asp Pro Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:29];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Val Pro Pro Ala Pro Leu Leu Asp Ser Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Ala Ile Glu Ser Ile Leu Lys Asn Leu Leu Pro Cys Leu Pro Leu Ala Thr Ala Ala Pro Thr Arg His Pro Ile His Ile Lys Asp Gly Asp Trp Asn Glu Phe Arg Arg Lys Leu Thr Phe Tyr Leu Lys Thr Leu Glu Asn Ala Gln Ala Gln Gln [SEQ ID NO:30];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp~~

~~Val Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:31];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Asn Pro Leu Leu Asp Pro Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:32];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Val Pro Pro Ala Pro Leu Leu Asp Ser Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:33];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg~~

~~Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:34];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Val Pro Pro Ala Pro Leu Leu Asp Ser Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:35];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Asn Pro Leu Leu Asp Pro Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Ser Leu Glu His Ala Gln Glu Gln Gln [SEQ ID NO:36];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Val Pro Pro Ala Pro Leu Leu Asp Ser Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Ser Leu Glu His Ala Gln Glu Gln Gln [SEQ ID NO:37];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys~~

~~Arg Pro Pro Asn Pro Leu Leu Asp Pro Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:38];~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Val Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Thr Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Ser Leu Glu His Ala Gln Glu Gln Gln [SEQ ID NO:39].~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Asp Arg Asn Leu Arg Leu Ser Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:40]~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ala Ile His His Leu Lys Arg Pro Pro Ala Pro Ser Leu Asp Pro Asn Asn Leu Asn Asp Glu Asp Met Ser Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro~~

~~Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:41]~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Asp Glu Asp Met Ser Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:42]~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Asp Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:43]~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Asp Glu Asp Val Ser Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:44]~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Asp Glu Asp Met Ser Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:45]~~

~~Met Ala Tyr Pro Glu Thr Asp Tyr Lys Asp Asp Asp Asp Lys Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Ala Pro Leu Leu Asp Pro Asn Asn Leu Asn Ala Glu Asp Val Asp Ile Leu Met Glu Arg Asn Leu Arg Leu Pro Asn Leu Glu Ser Phe Val Arg Ala Val Lys Asn Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:46]and~~

~~Met Ala Tyr Pro Glu Thr Asp Tyr Lys Asp Asp Asp Asp Lys Asn Cys Ser Ile Met Ile Asp Glu Ile Ile His His Leu Lys Arg Pro Pro Asn Pro Leu Leu Asp Pro Asn Asn Leu Asn Ser Glu Asp Met Asp Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:47].~~

12(withdrawn). ~~The composition of claim 10, wherein said human interleukin-3 mutant polypeptide is of the Formula:~~

~~Met Ala Asn Cys Ser Ile Met Ile Asp Glu Leu Ile His His Leu Lys Ile Pro Pro Asn Pro Ser Leu Asp Ser Ala Asn Leu Asn Ser Glu Asp Val Ser Ile Leu Met Glu Arg Asn Leu Arg Thr Pro Asn Leu Leu Ala Phe Val Arg Ala Val Lys His Leu Glu Asn Ala Ser Gly Ile Glu Ala Ile Leu Arg Asn Leu Gln Pro Cys Leu Pro Ser Ala Thr Ala Ala Pro Ser Arg His Pro Ile Ile Ile Lys Ala Gly Asp Trp Gln Glu Phe Arg Glu Lys Leu Thr Phe Tyr Leu Val Thr Leu Glu Gln Ala Gln Glu Gln Gln [SEQ ID NO:48].~~

Claims 13-26 (cancelled).